Supporting Information

Dendrite-free reversible Li plating/stripping in adiponitrile-based electrolytes for high-voltage Li metal batteries

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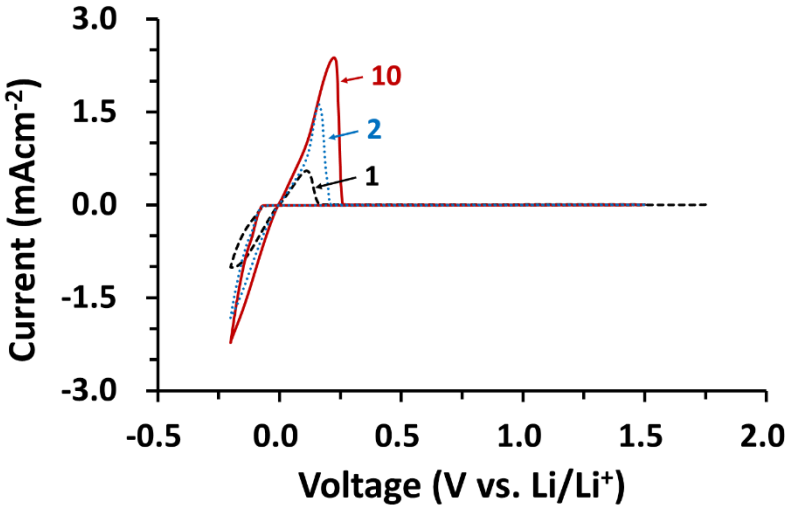

Fig. S1. Cyclic voltammograms for Li plating/stripping on SS in 0.25 M $LiBF_4$/EC:DEC (ethylene carbonate : diethyl carbonate, 3:7). Scan rate = 0.2 mVs^{-1}. Coin cell (Li || SS).

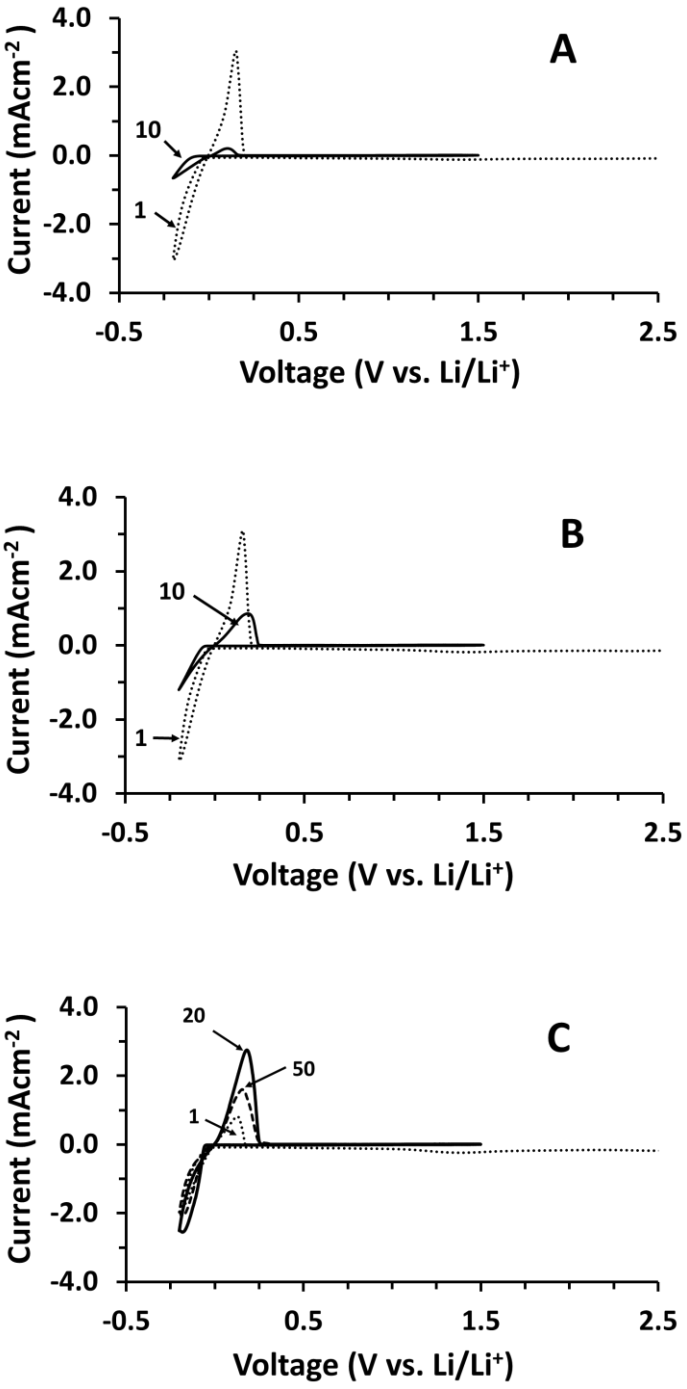

Fig. S2. Cyclic voltammograms for Li plating/stripping on SS in 0.25 M $LiBF_4$/ADN with Li/Li_2O treated in (A) 0.5, (B) 1.0, and (C) 2.0 wt% NO_2BF_4. Scan rate = 0.2 mVs^{-1}. Coin cell (Li/Li_2O ‖ SS).

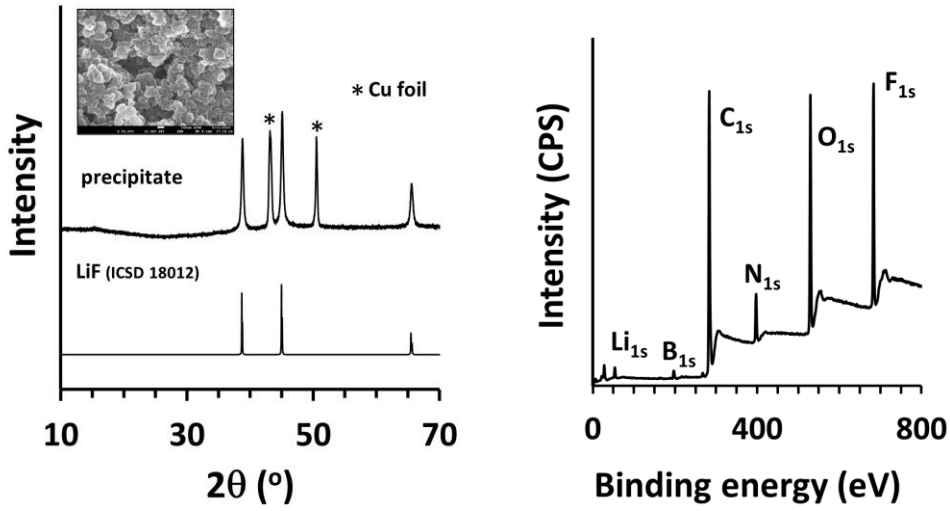

Fig. S3. (left) XRD pattern of precipitates produced during Li plating/stripping with bare Li (described in Fig. 3A). Inset shows a FESEM image of precipitates. The precipitates are composed of spherical particles of ca. 100 nm in diameter, which can block the separator in a coin cell set-up (Figure 1B). (right) XPS spectrum of precipitates.

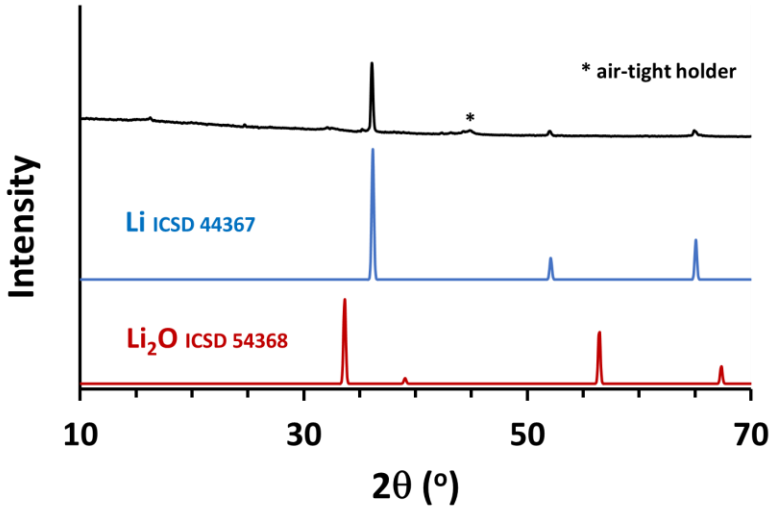

Fig. S4. XRD pattern of a powdery sample obtained from the surface film generated by immersing Li foil in NO_2BF_4/ADN. The surface film was gently rubbed with a soft rod to avoid the inclusion of a large quantity of underlying Li metal.

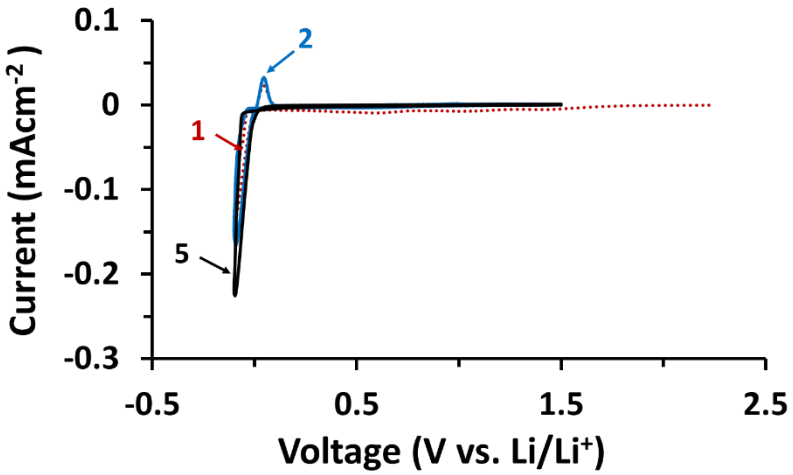

Fig. S5. Cyclic voltammograms for Li plating/stripping on SS coupled with Li/Li_2O in 1.0 M LiTFSI/ADN. Scan rate = 0.2 mVs^{-1}. Coin cell (Li/Li_2O || SS).